

**Results:** The Medtronic CoreValve (MCV) prosthesis was utilized in 68 (50%) patients, and the Edwards SAPIEN (ES) in 69 (50%), respectively. More than mild PAR was observed in 43 (32%) patients. In MCV patients, aortic valve calcification volume and mass were higher in patients with more than mild PAR compared to those with none or mild PAR ( $p=0.04$  and  $p=0.03$ ). In ES patients, annulus area and perimeter undersizing was higher in patients with more than mild PAR compared to those with no or mild PAR ( $p=0.001$ ). By multivariate logistic regression analysis, aortic valve calcification mass was the only independent predictor for PAR in MCV patients ( $p=0.02$ ), while in ES patients the only independent predictor was THV undersizing ( $p=0.001$ ) irrespective of calcific burden.

**Conclusion:** For self-expandable THV, aortic valve calcification mass was the strongest predictor for PAR, while in balloon-expandable THV, it was prosthesis undersizing. Hence, in patients evaluated for TAVI these parameters should guide selection of the prosthesis type.

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164

### Long-term clinical outcome of high-risk patients with severe aortic stenosis according to treatment modality: TAVI vs. SAVR vs. medical treatment

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**Introduction:** To assess long-term clinical outcome of high-risk patients with severe aortic stenosis as a function of treatment allocation to TAVI, surgical aortic valve replacement (SAVR), or medical treatment (MT) after interdisciplinary assessment within the Heart team.

**Method:** Patients with symptomatic severe aortic stenosis were consecutively enrolled into a prospective single center registry.

**Results:** Between April 2007 and September 2010 a total of 442 patients (age  $82\pm6$  years) at increased risk for surgery (log. EuroSCORE  $22\pm15$ ) were allocated to MT ( $n=78$ , STS-score  $6.5\pm4.1$ ), SAVR ( $n=107$ , STS-score  $4.8\pm5.3$ ), or TAVI ( $n=257$ , STS-score  $6.4\pm5.0$ ). After a mean duration of follow-up of  $48\pm10$  months all-cause mortality among patients undergoing MT, SAVR or TAVI amounted to 81%, 37% and 43%, respectively ( $p<0.001$ ). The hazard ratio for a composite endpoint of death, major stroke, and myocardial infarction was significantly lower in patients undergoing SAVR or TAVI as compared to MT in an adjusted analysis (SAVR versus MT: HR 0.31, 95% CI 0.21-0.46) (TAVI versus MT: HR 0.34, 95% CI 0.25-0.46). No significant difference in the risk of the composite endpoint was documented between patients treated with SAVR as compared to TAVI (adjusted HR 0.88, 95% CI 0.62-1.25). Valve-related repeat interventions beyond 30 days occurred in 3 patients with TAVI and in none of the patients undergoing SAVR. Eleven patients from the MT arm crossed over to TAVI ( $n=9$ ) or SAVR ( $n=2$ ) after a mean of  $21\pm12$  months and experienced a significant survival benefit as compared to patients with no conversion of treatment strategy. In a multivariate analysis across the entire cohort, SAVR (HR 0.39, 95% CI 0.24-0.61;  $p<0.001$ ), TAVI (HR 0.37, 95% CI 0.26-0.52), and female gender (HR 0.72, 95% CI 0.53-0.99) were associated with improved survival. In turn, BMI  $\leq 20\text{kg/m}^2$  (HR 1.60, 95% CI 1.04-2.47), diabetes (HR 1.48, 95% CI 1.03-2.12), peripheral vascular disease (HR 2.01, 95% CI 1.44-2.81), atrial fibrillation (HR 1.74, 95% CI 1.28-2.37), and severe pulmonary hypertension (HR 1.43, 95% CI 1.03-2.00) were identified as independent predictors of all-cause mortality.

**Conclusion:** In this selected cohort of high-risk patients with severe aortic stenosis assessed within the Heart team, long-term clinical outcome through 5 years of follow-up was comparable between patients treated with SAVR or TAVI in an adjusted analysis. Patients with medical treatment had a dismal prognosis.

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